

ABSTRACT

THESIS: Paleoecology of Planktonic and Benthic Foraminifera during the Paleocene-Eocene

Thermal Maximum (PETM) at San Agustin, Cuba

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Approximately 55 million years ago (ma) the Earth experienced an abrupt 4-8°C global temperature increase known as the Paleocene Eocene Thermal Maximum (PETM). The preservation of the PETM interval within the rock record is limited and one of the best examples within the Caribbean region is the San Agustin section in northwestern Cuba. Previous work on the San Agustin section included studies of the calcareous nannofossils as well as the planktonic foraminifera, this research expands on the original work to include benthic foraminifera. In the San Agustin section planktonic foraminiferal biostratigraphy shows a range from P4c due to the occurrence of *Globanomalina pseudomenardii* in the earliest samples and into E2 due to the occurrence of *Globorotaloides quadrocameratus* in the latest sample. This extends the planktonic foraminiferal biostratigraphy earlier than previously thought.

Utilizing the identified species at the San Agustin section and Planktonic/Benthic (P/B) ratio data collected an understanding of aspects of the paleoenvironment were deduced. The San Agustin data shows a distinct increase in water depth at the site correlating with the Paleocene Eocene Thermal Maximum. Rock samples also occurred which contained very low to no foraminiferal return. In the western region of Cuba during the late Paleocene into the early

Eocene the North American plate collided with the Greater Antillean Volcanic Arc. It is theorized that the low foraminiferal return is due to the active tectonics causing uplift and creating a lowstand, which lead to sediment shedding, and diluted the foraminifera within the sediments. This process of uplift and increased erosion appears to have occurred in the region multiple times before and after the PETM acting as the driving force of paleobathymetry. The exception to which is during the sea-level rise caused by the PETM warming which obscured the regional tectonics effect on the paleobathymetry.